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PSYCHOMETRIC DIFFERENTIATION OF MEN AND WOMEN BY THE PERSONAL PHILOSOPHY INVENTORY

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Summary—Item responses (true/false) to the Personal Philosophy Inventory, collected over a 10 yr period, were utilized to differentiate 868 undergraduate male and female psychology students. As hypothesized, women ($n = 520$) were more fearful but less egotistical than men ($n = 348$). Empirical (discriminant) analyses with the first 10 items (canonical correlation = 0.62) correctly classified 78% of the cases. Men endorsed more active, controlling items while women endorsed more passive and dependent items. The utility of derived "gender functions" for predicting and understanding the approach–avoidance to different vocations is considered.

INTRODUCTION

Psychometric differences between university men and women have been utilized to study the role of gender factors in phobias (Bourdon, Boyd, Rae & Burns, 1988), fear of success (Santuci, Terizian & Kayson, 1989) and vocational decision (Taylor, 1982). Differentiation between sex role- and gender-dependent constructs have frequently utilized the Bem Sex-Role Inventory (Bem, 1977) or BSRI (Ireland-Galman & Michael, 1983). It determines sex differences according to the manner in which the respondent endorses brief descriptors rather than by experiences, beliefs or preferences.

In pursuit of psychometric indicators of lability within the temporal lobes (Persinger & Makarec, 1987; Makarec & Persinger, 1990), conspicuous sex differences were noted in the reported incidence of experiences, preferences and beliefs. This information has been obtained from the Personal Philosophy Inventory (PPI), which contains 140 true/false items. Those items that were theoretically related to putative temporal lobe-dependent phenomenology have displayed both discriminative and convergent construct validity (Makarec & Persinger, 1990). Considering the consistency of the responses for this inventory, gender differences were investigated.

Persinger and Makarec (1990) noted that university women endorsed significantly more true-false items that referred to fears and phobias relative to university men who endorsed more items that inferred egotism relative to university women. The 6 fear items were: Q13—I am afraid of earthquakes (true); Q67—I am not afraid of snakes (false); Q72—I am afraid of mice, Q79—Lightning is one of my fears; Q124—I do not worry about catching diseases (false); and Q131—I have experienced terror. The 6 egotism items were: Q37—compared to other people my memory is excellent; Q48—I like to poke fun at people; Q54—If there was a car accident, I believe I would have a better chance than most people to survive; Q64—I am no different from anybody else (false); Q105—I like to spend time persuading people to do things; Q135—I sincerely believe that I am very special. Mean scores on both clusters of items were sufficient to explain 13% of the variance in sex differences.

In the present study we determined which combination of items would optimally differentiate men and women. There were two major reasons for this research. The first reason was to reveal both the conspicuous and the subtle differences in beliefs, experiences and practices between men and women; they may be relevant for studying the factors that determine career selection. The second goal of the study was to determine equations and item scales that could be used in clinical practice to assess androgyny.

METHOD

Subjects

Over a 10 yr period, a total of 348 men and 520 women served as subjects. They were enrolled in 12 different first and second year psychology courses. The mean and standard deviation for their ages were 24.9 and 7.8, respectively.

Procedure

All subjects completed the PPI within the class during a lecture period. This inventory is composed of 140 true–false items; it was designed to discern signs and symptoms that were suggestive of enhanced, but nonpathological, lability of the temporal lobes. The structure of the inventory has been discussed elsewhere (Persinger & Makarec, in press; Makarec & Persinger, 1990; Persinger & Makarec, 1987).

χ^2 analyses were completed between sex and each of the 140 items. Items were selected according to levels of statistical significance. The first level involved items that displayed sex differences at $P < 0.001$; the second level involved items that displayed sex differences at $0.001 < P < 0.05$. All of these items displayed P–Q percentages that were >0.19 and <0.81.

In order to discern which combination of items optimally differentiated females (code = 0) and males (code = 1), step-wise (Rao) discriminant analysis was performed. In order to obtain a tractable function, only 10 items were allowed to enter; empirically this was associated with the point at which each subsequent variable explained less than 1% of the variance. Multiple regression, with sex as the dependent variable, was completed for the 10 variables in order to generate a corollary equation.

To determine the degree to which the above equation could differentiate sexes more than the means of the fear and egotism cluster scores (Persinger & Makarec, 1990), two additional equations were calculated. The polarity scale was based upon the 6 items from the fear cluster and the 6 items from the egotism cluster. If a person endorsed an item from the fear cluster, a value of -1 was given; if an item from the egotism cluster was endorsed, a value of $+1$ was given. Consequently, scores could range between -6 and $+6$. For the optimal-combination cluster, the 12 items were allowed to enter in a step-wise regression. All analyses were completed by SPSSX software on a VAX 4000 computer.

RESULTS

The percentage of true responses for items that displayed statistically significant (χ^2, $P < 0.001$) differences between men and women are shown in Tables 1 and 2. Items that displayed moderate (χ^2, $0.001 < P < 0.05$) differences between gender are shown in Table 3. Although the χ^2 values for

Table 1. Percentage of yes responses for items endorsed significantly ($P < 0.001$) more frequently by males ($n = 348$) than by females ($n = 520$)

Male	Female	χ^2		Item
22	05	55.17	2	I like to read mechanics magazines
88	77	15.69	3	I do not always tell the truth
47	30	25.85	21	At least once during childhood, I hit my head (or was hit on the head) and blacked out
65	53	13.81	24	If I could get into a movie without paying and be sure I was not seen, I would probably do it
93	85	12.66	34	I would rather win than lose in a game
87	75	20.37	44	I would like to time travel
70	45	51.85	48	I like to poke fun at people
43	24	35.74	54	If there were a car accident, I believe I would have a better chance than most people to survive
18	05	40.17	90	People tell me that I imitate the characters in a movie I have just seen
42	31	11.25	110	I have dreams of floating or flying through the air at least once a year
41	29	13.17	115	Alien intelligence is probably responsible for UFOs

Table 2. Percentage of yes responses for items endorsed significantly ($P < 0.001$) more frequently by females than by males

Male	Female	χ^2		Item
37	64	16.19	14	I am afraid of earthquakes
19	30	12.60	17	An inner voice has told me where to find something and it was actually there
47	59	11.52	20	Sometimes I am sure that people can tell what I am thinking
80	89	13.19	26	I believe there is a God
25	36	11.27	50	I go to church at least once a week during most months
6	17	23.78	53	I keep a diary or notebook about my feelings and thoughts
83	94	27.10	56	I gossip a little at times
44	29	18.75	67	I am *not* afraid of snakes
13	43	85.66	72	I am afraid of mice
48	70	40.64	77	Criticism and scolding hurt me terribly
42	56	17.02	78	When I am really upset, I feel my hands shaking
11	28	38.77	79	Lightning is one of my fears
47	66	30.02	92	I like poetry
62	75	16.88	94	Telepathy is a real phenomenon
15	54	130.17	100	I have kept a diary
75	87	19.31	114	Sometimes when I am not feeling well I am cross
16	39	55.36	117	I have frequent headaches
42	58	21.41	121	I lack self-confidence
78	91	29.10	127	When I see a child starving from hunger on T.V. commercials, I feel sad

items in Tables 1 and 2 are large, their equivalent ϕ-coefficients (a type of correlation coefficient), are small. χ^2 of 11.25 (item 110), 55.17 (item 2), 85.66 (item 72) and 130.17 (item 100) are equivalent to ϕ-coefficients of 0.11, 0.25, 0.31 and 0.39, respectively.

For the first discriminative analyses only those items from Tables 1 and 2 were allowed to enter. Table 4 contains the first 10 items that entered the function as well as their relevant statistical

Table 3. Items that displayed mild statistically significant differences ($0.001 < P < 0.05$) between males and females

Male	Female	χ^2		Item
33	44	10.16	6	I go to church at least once a month
32	40	6.43	11	If I breath quickly, I feel dizzy
80	87	6.69	12	Sometimes an event will occur that has special significance for me only
89	84	5.36	22	I like to eat well prepared meat
18	14	3.87	30	I prefer to eat with my left hand
49	59	7.30	32	Sometimes I can read another person's thoughts
43	35	4.50	37	Compared to other people, my memory is excellent
37	45	5.26	42	Intense smells bother me more than other people
75	66	8.57	47	I like to read about science
39	47	5.89	59	People tell me that I become excited over insignificant events
47	38	7.18	60	Sometimes I am so full of pep and energy that I feel superhuman
32	41	7.01	61	Every so often I feel like gripping my thumb within the fingers of the same hand
44	35	7.06	62	When relaxed or just before falling asleep, I sometimes feel pleasant vibrations moving through my whole body
95	98	7.13	73	I get angry sometimes
24	32	5.69	75	I have never had "memory blanks" where I could not recall previous events
22	30	6.46	80	Everything is turning out just like the prophets in the Bible said it would
85	90	4.31	86	I prefer to write with my right hand
17	11	5.89	93	I can "speak in tongues"
73	66	4.78	98	My table manners are not quite as good at home as when I am out in company
20	26	4.35	104	Although I am not sure, there is a good possibility that I have lived in a previous time
19	26	6.33	107	After my religious conversion, I felt full of energy
20	27	4.29	122	When I am alone or feel really low, reciting poetry or prose is a pleasant experience

characteristics. The canonical correlation for the function was 0.62 and was statistically significant [χ^2 (10) = 418.57, $P < 0.001$]. The function correctly classified 77% of the males and 79% of the females. Multiple regression analyses (with females = 0 and males = 1) verified the entrance of these variables; a positive polarity for a partial regression coefficient (Table 4, last column) reflected a greater *residual* (after the first item) true response on this item for men relative to women. Neither the order nor the presence of these 10 variables were altered when the additional variables from Table 3 were allowed to enter.

The means and standard deviations for the (weighted) gender equation (obtained by multiple regression) were 0.36 (0.23; 95% confidence interval = 0.35 to 0.39) for women and 0.61 (0.22; 95% confidence interval = 0.59 to 0.63) for men, respectively. The simple means and standard deviations for the numbers of true (1) and false (0) responses for the 10 items were 0.39 (0.15) for the men and 0.45 (0.15) for the women, respectively. Whereas the weighted equation for the optimal combination of the 10 items accommodated 38% of the variance between sexes the simple average of the 10 items explained only 4% of the variance [$F(1,866) = 37.11$, $P < 0.001$].

To determine if the propensity to exaggerate responses affected the discrimination, analysis of variance was completed for the gender function between the sexes after scores on 9 items from the MMPI L scale (components of the PPI) had been covaried. Although the covariate was marginally significant [$F(1,865) = 5.84$, $P = 0.01$], the magnitude of the sex differences was not affected [$F(1,865) = 534.58$, $P < 0.001$; $\eta = 0.62$]; the correlation between the modified L scale and the score on the gender function was -0.06 (n.s.).

Multiple regression analysis with the means of the two clusters that constituted the fear-phobia and egotism items explained no more than 13% (adjusted r-squared) of the variance [$F(2,864) = 64.25$, $P < 0.001$]. Women displayed more affirmative responses to the fear cluster but fewer yes responses to the egotism cluster, relative to men. The partial regression coefficients for the two clusters were -0.58 and 0.42, respectively, for the equation; the constant was 0.49.

The optimal-cluster analyses, in order to determine which combination of the 12 items from the fear and egotism clusters could predict gender, resulted in the following equation (women = 0, men = 1): $-0.26 \times$ Q72 (I am afraid of mice), $+0.20 \times$ Q48 (I like to poke fun at people), $-0.15 \times$ Q13 (I am afraid of earthquakes), $+0.13 \times$ Q54 (If there were a car accident I believe I would have a better chance than most people to survive), $-0.12 \times$ Q79 (Lightning is one of my fears); the constant was 0.43.

The means and standard deviations for the optimal-cluster score for men and women were 0.52 (0.17) and 0.31 (0.21), respectively. This score explained 21% of the variance [$F(1,866) = 229.61$ $P < 0.001$; $\eta = 0.46$). The means and standard deviation for the polarity scale (-6 to $+6$) for males and females were 0.06 (0.16) and -0.07 (0.16), respectively. This score explained 13% of the variance [$F = 124.87$, $\eta = 0.36$].

DISCUSSION

Our university population displayed gender-differentiating characteristics that have been shown in other studies. The significant propensity for university women to report greater phobic and fear responses relative to university men is similar to the patterns reported in the general population

Table 4. Discriminant function characteristics of the first 10 items from Tables 1 and 2 that differentiate males and females; the discriminant function coefficient is unstandardized

Item	Coefficient	Wilk's Lambda[a]	Regression coefficient
100	1.16	0.85	−0.28 (0.03)
72	0.95	0.77	−0.23 (0.03)
48	−0.62	0.73	0.15 (0.03)
117	0.54	0.71	−0.13 (0.03)
2	−0.92	0.68	0.22 (0.04)
90	−0.88	0.66	0.21 (0.04)
56	0.67	0.65	−0.16 (0.04)
54	−0.54	0.63	0.13 (0.03)
77	0.42	0.62	−0.10 (0.03)
94	0.41	0.61	−0.10 (0.03)
constant	−1.33		0.72

[a]All changes in Rao's V were $P < 0.0001$.

(Bourdon *et al.*, 1988). Robbins (1983) indicated that women endorse items that involve helping others and suggest artistic interests while men emphasize scientific investigation and adventure. In the present study, similar interests were revealed by the men (time-travel, mechanics magazines) and women (poetry, empathy for less fortunate people).

Our results also extend the understanding of sex differences within the domains of personal (self-evaluated) belief, phenomenological experience and behavioral preference. The response pattern of undergraduate university women (at least those enrolled in psychological courses), suggested reliance upon "nonself-referenced" forces such as telepathy, psi phenomena, or religious rituals. Such endorsements, in conjunction with the increased incidence of multiple fears (such as earthquakes, mice and lightning), suggest that fearfulness might encourage women to become less dependent upon themselves and more dependent upon "powerful forces" to which they believe they are submissive.

University males, on the other hand, presented themselves as more egotistical, confrontational, and less dependent upon nonself-referenced forces. Correlative to these features was the greater tendency to endorse items that indicate less concern for minor deviations from social mores. There was a greater denial of both internal states, such as anger, and individual mortality. Although we did not measure extraversion or introversion directly, the general pattern is compatible with the concept that university men are more extraverted while university women are more introverted.

If the direction and pattern of the responses to these items reflect the behavior and cognitive processes of the respondents, then these themes could significantly affect the career choices of women. Vocations that include perceived risks of threat, competitive social interaction and reliance upon self-resources might be avoided. Stated alternatively, men would be more likely to enter such professions because they overestimate their capability and underestimate the risk factors. Although sex differences only explained about 13% to 21% of the variance in various combinations of the fear and egotism clusters (equivalent to correlation coefficients of 0.36–0.46), the magnitude could be sufficient to produce significant sociological profiles.

The concept of an androgyny continuum (Bem, 1977) has been developed to understand sex differences in behavior and attitude; the most popular psychometric procedure has involved single word (or short phrase) self-descriptors (Bem, 1977). However our thesis students, in several unrelated studies, have consistently shown only marginally significant differences between the BSRI scores of men and women in undergraduate psychology courses. In the present study an equation, composed of 10 items that directly reflected personal experience, was determined that correctly classified 78% of the males and females. These weighted items might be useful as a correlative measure to the Bem Sex Role Inventory and might display even greater accuracy of classification of men and women in the general population.

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